



Behind the scenes at the water lab

Minneapolis produces an average of 70 million gallons of drinking water per day. That water must be rigorously tested to make sure it's safe for the hundreds of thousands of customers who use it. The responsibility for these tests falls on the shoulders of the chemists and lab technicians who work at the Water Works laboratory in Fridley.

Jars of water dot the counters at the laboratory. Each sample looks crystal clear. Because the things lab workers are looking for can be in concentrations as small as a few parts per million, researchers need to put the water through a battery of tests. Over 200 tests a day are performed at the laboratory, including tests for pH, hardness, alkalinity, turbidity, fluoride, taste and odor, and a variety of additional chemical, physical and bacteriological components.

Water samples are also sent out for testing, including tests that must be performed by federal and state regulators. These include tests for lead and copper concentrations. Minneapolis tap water has consistently fallen below the maximum

limits of these materials. The government also tests for some unregulated contaminants to see if there's an issue with their presence.

The City of Minneapolis is also trying out an innovative way to test the water before it ever gets treated. As river water enters the water treatment process at Fridley, some of it is diverted to a small, cylindrical aquarium where dozens of freshwater clams live. Each clam has a sensor that checks to see if its shell is open or closed. Because the mollusks literally "clam up" when the water is of poor quality, monitoring them can give us an early warning.

This "biomonitoring" is done through the U.S. Environmental Protection Agency and the Department of Homeland Security. Since Minneapolis began it three years ago, other cities along the Mississippi have followed suit. Maintenance costs for this program are extremely low. Plus, the clams help us monitor the quality of the Mississippi River's natural environment and spot any unknown hazards that may pop up.

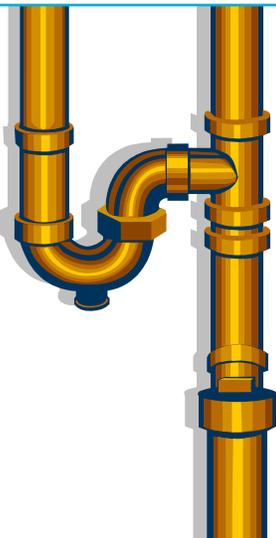
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Minneapolis Water Works

Call 311 or visit www.ci.minneapolis.mn.us/water



Reducing corrosion from home plumbing

Even when water is clean and safe, it can react with metal pipes. That's why we maintain a balance of water properties to insure that our water doesn't corrode plumbing in homes. This is especially important with older houses and buildings that have lead and copper water pipes. When corrosion happens here, these elements can end up in the water.

While home plumbing is the responsibility of homeowners, we help prevent this potential health hazard. We add to the water a chemical buffer that's safe and prevents the water from interacting with the metal plumbing. We also maintain a slightly elevated pH in our water, which keeps it from reacting with the metal.

Our water quality experts sampled residences throughout Minneapolis for lead and copper levels in the water. Federal regulations require that at least 90 percent of tested homes have low levels, and Minneapolis met those requirements by a big margin.

From the river to your tap

The Mississippi River is the source for our tap water. Before it gets to your home, this water is filtered and treated by the City of Minneapolis. Water quality experts also test the water thoroughly in certified laboratories that can detect trace amounts of contaminants.

Whether you live in Minneapolis or another city, the tap water you get contains trace amounts of contaminants. These contaminants do not necessarily pose a health risk. Much depends on the substance and the amount dissolved. **No contaminants were detected at levels that violated drinking water standards.** However, some contaminants were detected in trace amounts that were below legal limits. The table on the right shows the contaminants that were detected in trace amounts last year. (Some contaminants are sampled less frequently than once a year; as a result, not all contaminants were sampled for in 2009. If any of these contaminants were detected the last time they were sampled for, they are included in the table along with the date that the detection occurred.)

Nationwide, the sources of drinking water (for both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, naturally occurring minerals and, in some cases, radioactive material, can dissolve into it. The water can also pick up substances resulting from the presence of animals or human activity. This is why the U.S. Environmental Protection Agency (EPA) regulates substances that can be harmful to human health and have at least a reasonable possibility of being found in water sources or finished drinking water. Our water is monitored for these regulated contaminants. Tests are performed weekly, quarterly or annually, depending on the substance being monitored. However, levels of many substances change little over time, or the chance of finding a detectable amount is low. In these instances contaminants are monitored less than annually.

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which

are byproducts of industrial processes and petroleum production. They can also come from gas stations, urban stormwater runoff and septic systems.

Radioactive contaminants, which can occur naturally or from oil and gas production and mining activities.

Understanding the laboratory results and terms

The **Average Result** is the value used to determine compliance with federal standards. It sometimes is the highest value detected and sometimes is an average of all the detected values. If it is an average, it may contain sampling results from the previous year.

The highest level of a substance allowed in drinking water is the Maximum Contaminant Level (**MCL**). The EPA sets this level. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. Some contaminants also have a Maximum Contaminant Level Goal (**MCLG**). This is an even more conservative level of the substance than the MCL, where it has no known or expected health risk. MCLGs add a margin of safety.

The MCL for lead and copper is known as the Action Level (**AL**). Exceeding this level triggers corrective action to get 90 percent of all samples below this concentration. There is convincing evidence that it is necessary to add a disinfectant to control microbial contaminants. The Maximum Residual Disinfectant Level (**MRDL**) is the highest level of a disinfectant allowed in drinking water. The MRDL Goal (**MRDLG**) is the level of disinfectant where it has no known or expected health risk. These goal amounts do not reflect the benefits of using disinfectants, only the level we should not exceed for safety.

The **90th Percentile Level** is the value obtained after disregarding 10 percent of the samples taken that had the highest levels. (For example, in a situation in which 10 samples were taken, the 90th Percentile Level is determined by disregarding the highest result, which represents 10 percent of the samples.) Note: In situations in which only 5 samples are taken, the average of the two with the highest levels is taken to determine the 90th percentile level.

“**Turbidity**” is a measure of water clarity. Certain treatment techniques are required to reduce turbidity (increase clarity) and eliminate microorganisms in the drinking water. Regulations require turbidity to be less than 0.3 nephelometric turbidity units (NTU) 95 percent of the time and less than 1 NTU all of the time.

The drinking water provided to customers may meet drinking water standards, but the

Minnesota Department of Health has also made a determination as to how vulnerable the source of water may be to future contamination incidents. If you wish to obtain the entire source water assessment regarding your drinking water, please call (651) 201-4700 or go online at: www.health.state.mn.us/divs/eh/water/swp/swa.

If you have questions about City of Minneapolis drinking water or would like information about opportunities for public participation in decisions that may affect the quality of the water, please call (612) 661-4999.

What you need to know about drinking water regulations

In order to ensure that tap water is safe to drink, the EPA limits the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulates contaminants in bottled water, which must provide the same protection for public health. The EPA standards we meet for tap water are even higher than those required for bottled water. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily mean that water poses a health risk. You can find more information about contaminants and potential health effects by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.

If you have special health requirements

Some water customers may be more vulnerable to contaminants in drinking water than the general population. They include people with weakened immune systems (including cancer patients undergoing chemotherapy, organ transplant patients and people with HIV/AIDS or other immune system disorders), some elderly people, and infants. Anyone who is at a higher risk of infection should seek advice from their health care providers about drinking water. The Safe Drinking Water Hotline at (800) 426-4791 has guidelines from the EPA/Centers for Disease Control to lessen the risk of infection by Cryptosporidium and other microbial contaminants.

Minneapolis Water Quality (Averages in ppm)

Total Alkalinity: 32
Total Hardness: 71
Total Residue: 191
pH: 8.75

Chlorine Residual Combined: 3.8

Lead and drinking water

Elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Minneapolis is responsible for providing high quality drinking water, but cannot control the materials used in household plumbing. To minimize the potential for lead exposure due to your plumbing, let your tap run for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, testing is available. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure, is available from the Safe Drinking Water Hotline at (800) 426-4791 or at www.epa.gov/safewater/lead.

Your water: taste and smell

Our water supply has its own unique challenges in the treatment process. We are subject to the weather and also seasonal changes. In the spring and fall, runoff can put higher concentrations of organic matter into the Mississippi River. This elevates the color of the river water and can also cause an increase in taste and odor causing components. The City has specific means of dealing with these issues. The change in chemical treatment with the use of permanganate and increased use of powdered activated carbon is the remedy. The human nose can detect changes at extremely low levels. Increased technology for analysis has been able to detect these components at the same sensitivity that we taste and smell. The primary components we see are geosmin and methylisoborneol (MIB), which at high enough levels can produce an earthy smell.

All disinfection chemicals and compounds used to address seasonal taste and smell issues exist at levels well below federally mandated exposure limits. Please remember that seasonal changes in taste and smell do not affect the safety of our drinking water. Although we detect a different taste or an odor these are not indicators of unsafe drinking water.



2009 Laboratory Testing Results for Minneapolis Water

Detected Contaminant	date	Units of Measure	MCLG	MCL	Range of Detections	Average Result	Typical Source of Contaminant
Fluoride		ppm	4	4	0.67-3.77	1.01	State-mandated additive that promotes strong teeth; Fertilizer and aluminum factory discharge; Erosion of natural deposits.
Nitrate (as Nitrogen)		ppm	10	10	0.4-2.2	1.6	Erosion of natural deposits; Fertilizer runoff; Leaching from septic tanks, sewage.
Turbidity		NTU	N/A	TT	Lowest Level of Compliance: 98.9%	Highest Reading: .39	Soil runoff.
Copper 9/21/2009		ppm	N/A	AL: 1.3	0 out 50 sites over AL	90% of samples < 0.07	Corrosion of home plumbing systems; Erosion of natural deposits.
Lead 9/21/2009		ppb	N/A	AL: 15	0 out of 50 sites over AL	90% of samples < 2	Corrosion of home plumbing systems; Erosion of natural deposits.
Some contaminants do not have Maximum Contaminant Levels established for them. These unregulated contaminants are assessed using state standards known as health risk limits to determine if they pose a threat to human health. If unacceptable levels of an unregulated contaminant are found, the response is the same as if an MCL has been exceeded; the water system must inform its customers and take other corrective actions. The unregulated contaminants that were detected are below:							
Sodium		ppm	N/A	No EPA limit set	N/A	9.9	Erosion of natural deposits.
Sulfate		ppm	N/A	No EPA limit set	N/A	24.8	Erosion of natural deposits.

Key to Abbreviations: **ppb:** parts per billion. **ppm:** parts per million. **NTU:** nephelometric turbidity units. **TT:** treatment techniques.

Be wary of door-to-door water testers

Over the past few seasons a number of concerned residents have contacted us about a company that comes into homes to test the tap water. We want our customers to know that the City of Minneapolis is NOT affiliated with any business that does this kind of thing.

People from the company go door to door, asking to test the water inside homes. Sometimes they take samples for further evaluation. Later, they come back with “test results” and tell residents that they found harmful, elevated or hazardous components to the City water supplied to their homes. The most common “problems” reported involve hardness and levels of chlorine, fluoride and other elements. This kind of activity has also been reported in other cities as well.

To set the record straight, Minneapolis already softens the water that goes to homes and businesses, so it needs no further softening. Our water is safe for people, pets and plumbing. The chlorine in our water is at a low level, and it’s required to insure the water stays clean and safe. The fluoride in the water is also mandated and is at safe levels. Minneapolis tap water is tested every day.

If you have concerns about this solicitation, do not hesitate to report it to the City of Minneapolis by calling 311.

Our water rate promotes conservation

State government requires that, starting this year, all major tap water suppliers in Minnesota have a water rate that promotes water conservation to customers. We believe our current rate already encourages conservation, and there’s a track record showing that we are using less tap water as a result.

According to the state Water Conservation Plan, the Minnesota Department of Natural Resources would like daily per capita household water use to be at 75 gallons or less. In 2008, the Minneapolis daily per capita household use was at 61 gallons. That’s much less than many suburbs, and it’s been going down ever since 2000.



Go with the low-flow

When replacing your toilets, showerheads or any appliances that use water, think about conservation. There are options that use less water, which saves on this resource and also costs you less money in the long run.

Toilets – Older households can have toilets that use anywhere from 3.5 gallons to six gallons of water per flush. Newer toilets are required to use just 1.6 gallons per flush.

Showerheads and faucets – By aerating the water, low-flow showerheads and faucets can reduce the amount of water you use without feeling or functioning like less water.

Appliances – Dishwashers and washing machines are now being sold that use less water. Before you buy one of these appliances, check to see how much water they use.

Find out more about water conservation at www.ci.minneapolis.mn.us/water.



WWW.TAPMPLS.COM

English: Attention. If you want help translating this information, call 311. **Spanish:** Atención. Si desea recibir asistencia gratuita para traducir esta información, llame al (612) 673-2700. **Somali:** Ogow. Haddii aad dooneyso in lagaa kaalmeeyo tarjamadda macluumaadkani oo lacag la' aan wac (612) 673-3500. **Hmong:** Ceeb toom. Yog koj xav tau kev pab dawb txhais cov xov no, hu (612) 673-2800. **TTY:** Call (612) 673-2157.

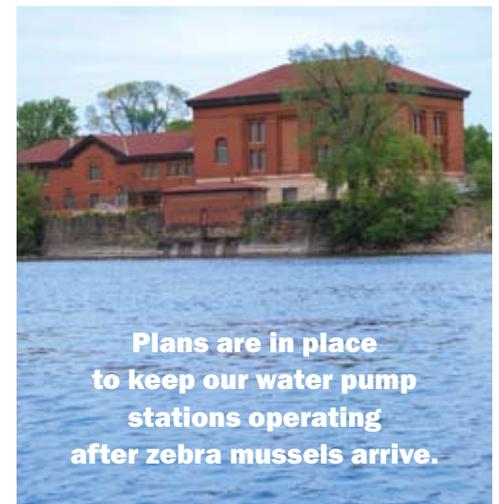
Water Works ready for zebra mussels

Biologists expect zebra mussels, an invasive species that has crept into America’s waterways, to make it to Minneapolis’ stretch of the Mississippi River in the near future. These shellfish have created problems for water treatment facilities since they first surfaced in the Great Lakes in 1988. Our plant crews have taken steps to make sure they don’t stop our ability to produce water.

No larger than 1.25 inches, little zebra mussels don’t seem like a threat to major equipment. However, the shellfish cling like barnacles to smooth, hard surfaces. Clusters of them can get so dense that they can clog water intakes.

Minneapolis will use a permanganate solution, a chemical commonly used in the treatment of water, in the event that any of the mussels are detected within a water treatment plant. The solution kills zebra mussels and any unseen microorganisms that may have attached.

It also turns out that softening the water fights zebra mussels. Minneapolis is one of the few water utilities in the state that softens water before sending it to customers. This process increases the water’s pH to a point where zebra mussels cannot survive. In this way, improving the water quality for customers actually makes it worse for the mussels.



Plans are in place to keep our water pump stations operating after zebra mussels arrive.